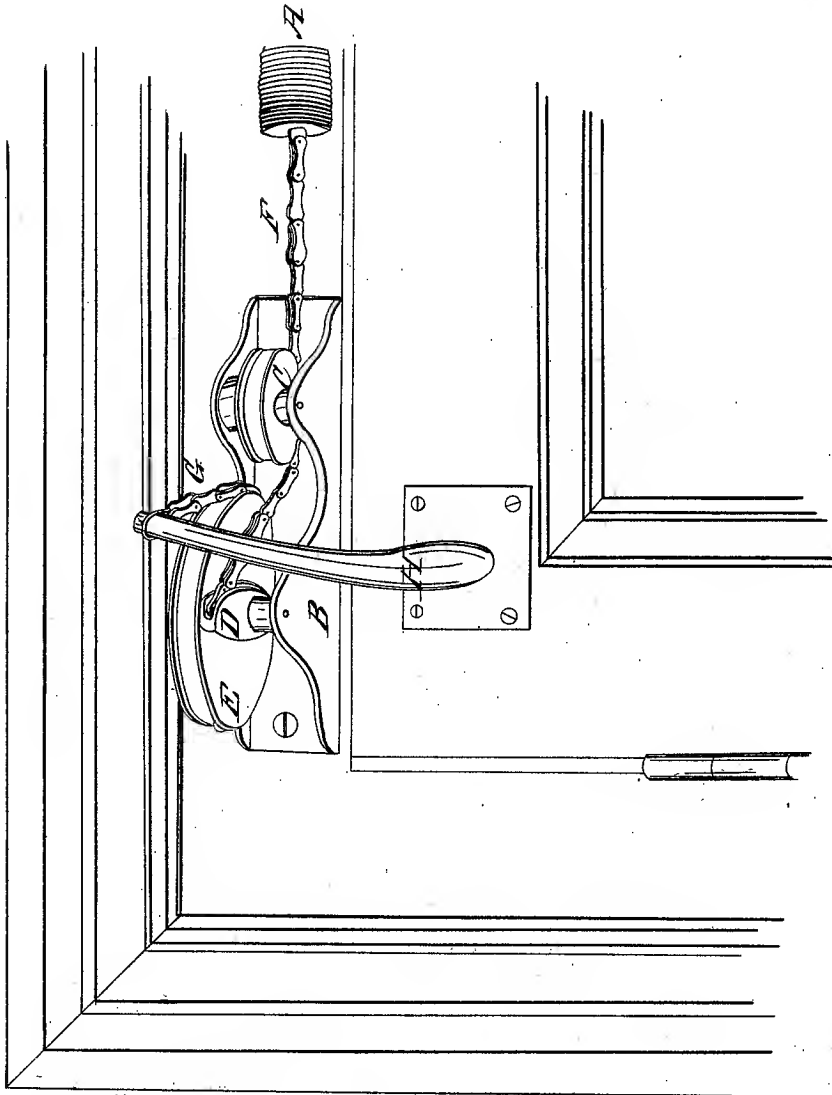


I. S. Richardson,

Door Spring.

N^o 433.

Patented Oct. 20, 1837.



Witnesses:

E. Johnson

Thomas A. Dexter

Inventor:

I. S. Richardson

UNITED STATES PATENT OFFICE.

ITHIEL S. RICHARDSON, OF BOSTON, MASSACHUSETTS.

SPRING FOR SHUTTING DOORS AND GATES.

Specification of Letters Patent No. 433, dated October 20, 1837.

To all whom it may concern:

Be it known that I, ITHIEL S. RICHARDSON, of the city of Boston, county of Suffolk, and Commonwealth of Massachusetts, have
5 invented a new and Improved Spring for Shutting Doors and Gates; and I do hereby declare that the following is a full and exact description.

The nature of my invention and apparatus for shutting doors and gates, are composed of the following parts, to wit. A frame six inches long, in which is placed a wheel four inches in diameter having on one side an eccentric or cam, reaching from the periphery of the wheel to its center or fulcrum—on the top of this cam or eccentric (at the periphery of the wheel) is attached one end of a small chain, running under a pulley placed in the same frame, one inch
20 from the periphery of the wheel, the other end of the chain being attached to a spiral spring, or cord and weight, whichever may be though most expedient. This wheel is grooved on its periphery, in which groove
25 runs another chain, one end of which is made fast in the groove and the other is attached to an arm or stud on the door. The above parts are in all cases made of some metallic substance.

30 *Modus operandi:* The frame, B, is placed on the casing one inch above the door and secured by screws, being at right angles and nearly on a vertical line with the hinges of the door, bringing the wheel, E, the cam or eccentric, D, and the pulley, C, into a horizontal position. The arm or stud, H, is made fast to the door by means of screws, two inches from a vertical line with the hinges, and so near the upper edge of the
40 door as to bring the top of the arm or stud on a level with the periphery of the wheel. One end of the chain, G, is then attached to the wheel, E, passing round the wheel in the groove on its periphery, and the other
45 end is attached to the stud or arm, H, on the door. The spiral spring, A, is then placed one inch or more above the door in

a horizontal line with the frame, B, the end of the spring most distant from the frame is made stationary; and to the other end of
50 the spring is attached one end of the chain, F, which passes under the pulley, C, and the other end is attached to the cam or eccentric, D, at the periphery of the wheel, E. The parts being thus arranged, the opening
55 of the door turns the wheel, E, by means of the stud, H, and chain, G, which motion causes the chain, F, attached to the cam or eccentric, D, to act upon the spiral spring, A. And as the door opens, the cam or eccentric, D, inclines the chain, F, to the
60 center or fulcrum of the wheel, E. Thus shortening the lever, and decreasing the power as the door opens, and when shut the lever is at its greatest length. 65

I would here remark that an arm or lever may be used in place of the wheel, E, and chain, G, and for heavy doors would recommend them. On one end of the arm or lever is a cam or eccentric the same as on the
70 wheel, and is placed in the frame in the same position. A small pulley, in this case, is placed on the top of the stud on the door, which runs out on the lever as the door opens. The effect and operation is nearly
75 the same as in the case above described. These springs will admit of being placed in different positions on the door, and when desired, can be nearly concealed from view, by the casings of the door. 80

What I claim as my invention and desire to secure by Letters Patent, is—

The application of a cam or eccentric wheel to a spring for shutting doors and gates in the manner herein described by
85 which the power of the spring, acting on the door, is decreased as the door opens, and which allows the spring to act with its greatest force when the door is nearest shut, denominated the "eccentric spring." 90

ITHIEL S. RICHARDSON.

Witnesses:

E. F. JOHNSON,
THOMAS A. DEXTER.